Broad Chiller Joining Procedure

Because of the limitation of transportation or the jobsite installation requirements, some of the Broad chillers must be divided into several parts (EX: HTG, Main shell & Accessories), shipped separately and conjunct at the jobsite. The quality of joining procedure will highly effect the operation and life span of the chiller, it can't be treated carelessly.

1. Preparing Works before Joining Procedure (Tools, Equipment, Materials)



Package pure N2 (99.999%)



Pressure reducer & N2 charging pipe



Argon welder





Anger grinder



Vacuum pump



Vacuum meter



Antirust Paint & Brush



Sand Paper



See-through Pipe





Leakage-check liquid (Soap)



Solution Basin

Solution Drum

- 1. Chiller check.
 - a) Check the package material if it's good, make sure there isn't water and rust.
 - b) Check the parts according to the list, make sure there isn't any parts missing or damaged, type and quantity should be correct too.
 - c) Check if the pressure at Main shell and HTG is 0.02Mpa.
 - d) If the pressure \leq 0Mpa, please contact the Broad engineer immediately.



- 2. Main shell and HTG connection.
 - a) Using the Crane to put the chiller right on the base, correct the level by Horizontal pipe, levelness $\leq 0.8\%$. Using the Horizontal pipe correct the chiller base, levelness $\leq 0.8\%$.
 - b) Connecting diluted solution pipe and Concentrated solution pipe.(A. Diluted solution pipe, B. Concentrated solution pipe)



c) Connecting Vapor pipe



d) Connecting HTG purging pipe



4 Open N2 charging valve on the top of the Non-condensable gas box at the main shell side. Open the tooling valve on the HTG's vapor pipe, make the pressure inside the chiller a little bit higher than the surroundings, open the sealing plate on the main shell, HTG vapor pipe, diluted solution pipe, concentrated solution pipe, HTG Purging pipe, use the Anger grinder polish joint points (to guarantee the welding quality).

Attention: Please be careful with the instruments such as Pressure gauge, Pressure controller and Electrical wires; make sure there aren't any electrical instruments damaged during the connection

job.





5 Because of shipping and rigging, when opening the sealing plate on diluted solution pipe, concentrated solution pipe, should have some lithium bromide solution come out. So please open the sealing plate slowly and use basin to collect the solution, and keep it in the sealed barrels.



6 Cleaning the inside of chiller, keep the pressure inside the chiller a little higher than surroundings, make sure the insides of the pipes are clean. Put the Main shell and HTG close, align the pipes, the distance between the pipes should ≤0.3mm, and welding line can be a little higher than the other welding lines on the chiller. The lines should be well shaped and good looking, check the lines carefully. Gas hole, slag inclusion, crackle, incomplete fusion, undercut etc. are strictly prohibited.





Open the Steam angle valve and 2 Solution angle valves after welding is finished. There should be no abnormal sound and easy to open. Charging N2 into the chiller until the pressure reached 0.04, 0.06, 0.08 step by step. Each time use the Leakage check liquid to test the joint points. After they are totally polished, use the tissue to clean the joint point. Keep the pressure 30 minutes, confirmed there are no bubbles from the point and the pressure gauge keep still.

Attention:

A. Welding must be finished in 24 hours after the pipe sealing plate has been opened.

B. Tooling sealing plate (special plate temporary used for leakage check) should be installed before the leakage check, rupture disk should be installed after leakage checking.

- 7 Purge the chiller after the leakage check passed. Using the Bubble test to check the bubbles, if the number of bubbles $\leq 2/\min$, then purging job is finished and start charging solution.
- 8 Cleaning & Paint repairing1st, using clean water to wash the joint point several times;

2nd, using sand paper to polish the point until it has metallic luster while it's dry enough;

3rd, using the antirust paint to brush the point twice as base painting. The paint should be smooth and shiny without any color different compared to other area.



9 Electric connection: connect the HTG temp. sensor, exhaust sensor, pressure controller, temp. controller & HTG crystallization sensor at the HTG side to the Control Box on the Main Shell though Accessory Connection Box. Check the outside appearance and make sure there aren't any mistakes.



